Battelle
The Business of Innovation

ASSESSING CURRENT AND FUTURE TECHNOLOGIES TO MEET THE RANGE SUSTAINABILITY CHALLENGE

James L. Tankersley (Battelle)

Jerad A. Ford (Battelle)

Wednesday, April 27th 2004

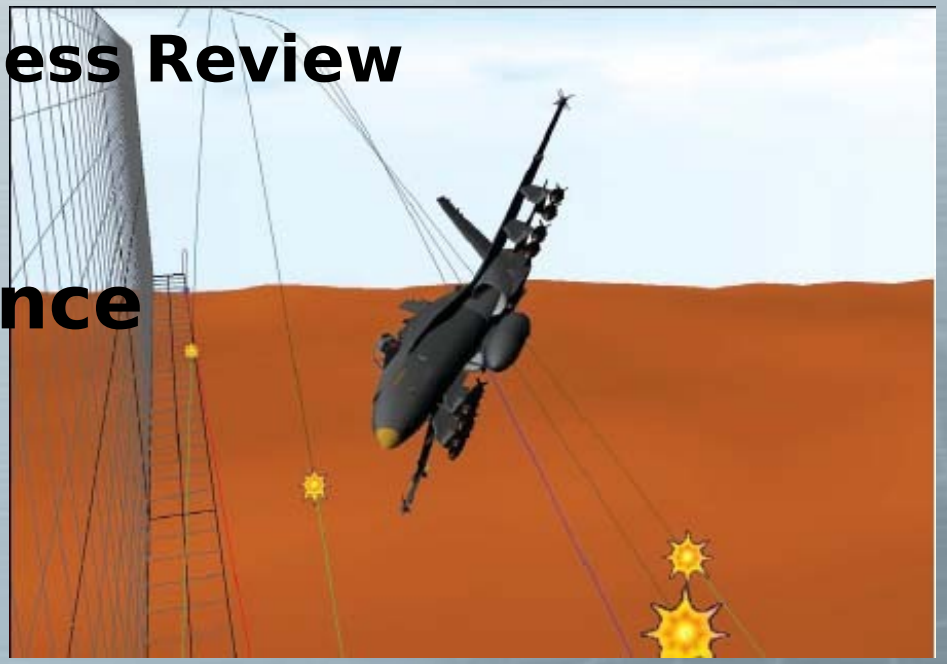
NDIA 30th Environmental and Energy Symposium and Exhibition

Introduction

- **Two Paths**
  - Range Readiness and Preservation Initiative (RRPI) 'Clarifications'
  - New Technologies/Innovative Solutions
- **DoD Challenges**

Challenges

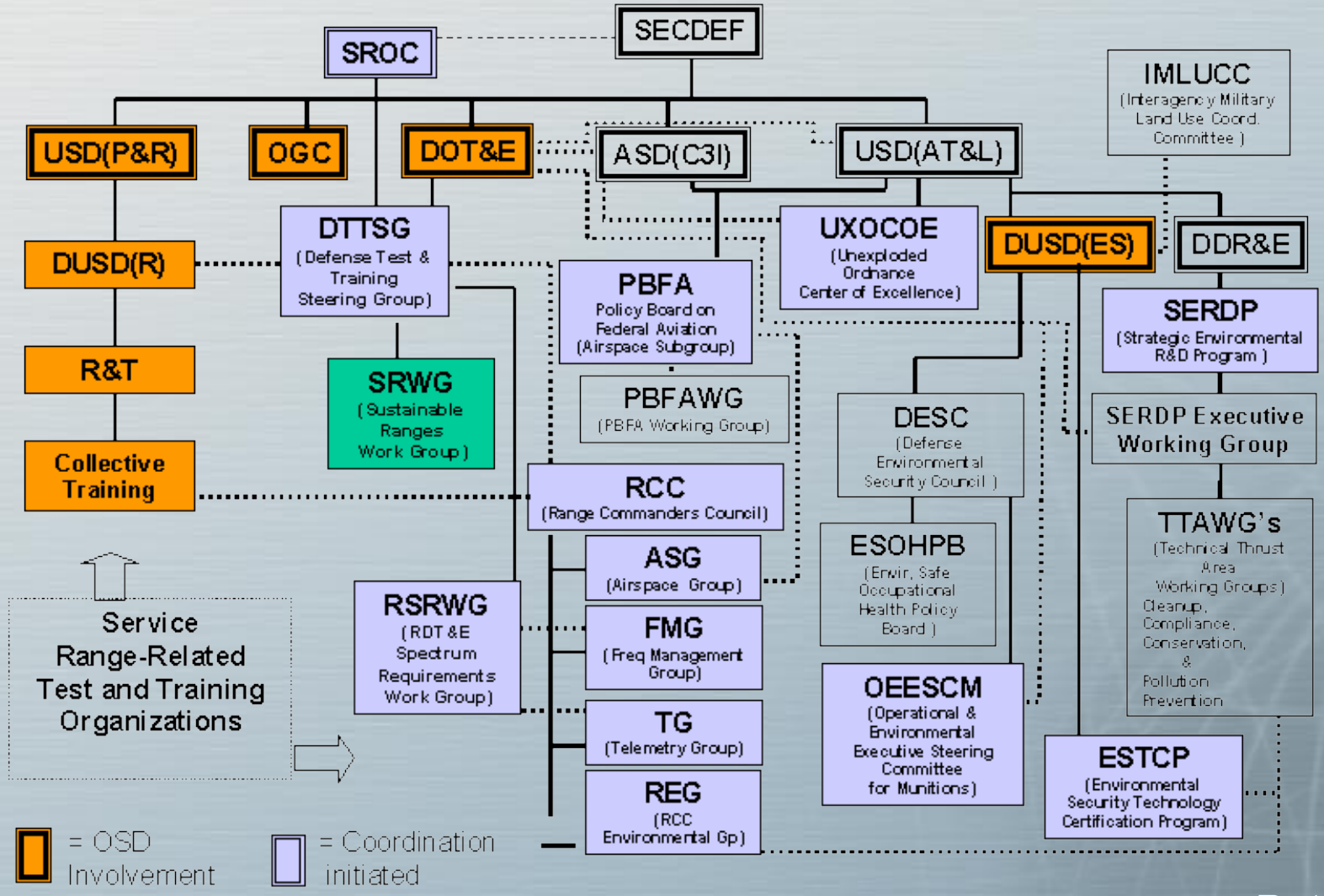
- **Difficulties Quantifying Readiness**
  - **Senior Readiness Oversight Council**
  - **Joint Monthly Readiness Review**
- **Regulatory Compliance Issues**
  - **Range Rule**



Challenges (cont.)

- **Goals of Sustainable Range Management**
  - **Senior Readiness Oversight Council (SROC)**
  - **Sustainable Range Working Group**
  - **Seeking clarification for RCRA, CERCLA, and CAA**

Working on Range Sustainability



Battelle
The Business of Innovation

DEFINING/PRIORITIZING TEST AND TRAINING VULNERABILITIES

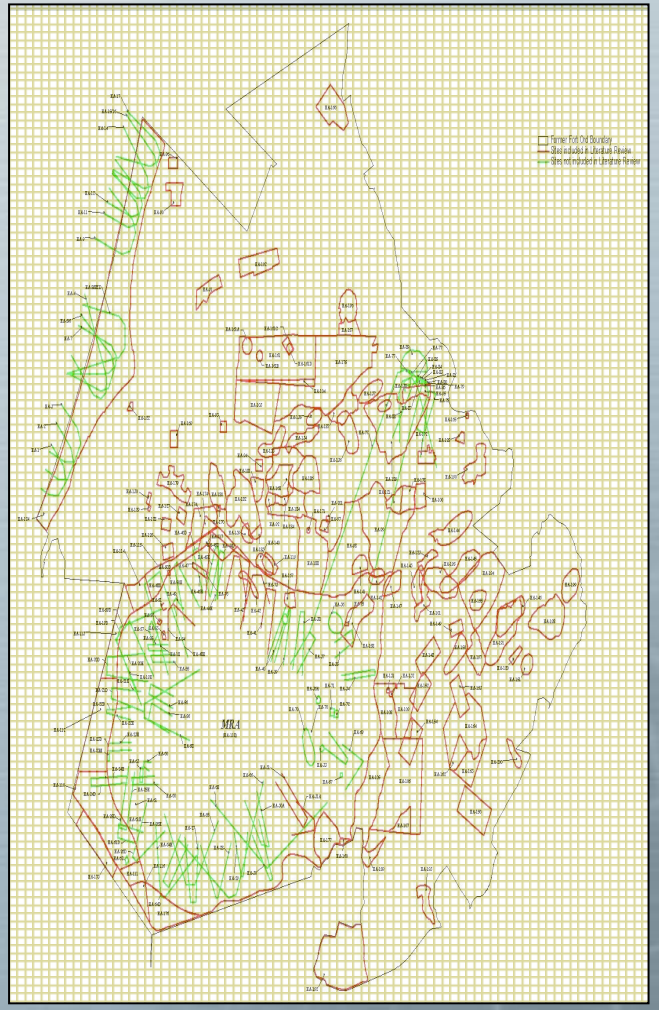
- A need to develop defined methodologies for both identifying and prioritizing range-related technologies
- Quantifying the effect on range sustainability of new weapon systems, technologies, and training activities

Technology Evaluation Scorecard

- **Establish Goals and Objectives**
  - **Defining Range-Specific Characteristics**
- **Encroachment**
  - **“Base Case” Scenario**

Nine Encroachment Areas

- Endangered Species Act
- UXO and Munitions
- RF Spectrum Encroachment
- Maritime Sustainability
- National Airspace System
- Air Quality
- Airborne Noise
- Urban Growth
- Outreach



Battelle
The Business of Innovation

Technology Evaluation Scorecard

- **Establish Interrelationships**
  - **Defining A Range-Specific Goal Baseline**
- **“Sunset Range”**
  - **Establish Baseline Characteristics**
  - **Define Mission**

Relative Ranking of Sustainable Range Criteria

Establish Interrelationships Between Goals And Objectives

Depends on

		Endangered Species Act Goals	UXO and Munitions Goals	Spectrum Encroachment Goals	Maritime Sustainability Goals	Nat'l Airspace System Goals	Air Quality Goals	Airborne Noise Goals	Urban Growth Goals	Community Outreach Goals
1	Endangered Species Act Goals		10	0	10	0	2	5	10	10
2	UXO and Munitions Goals	10		10	10	5	10	5	10	10
3	Spectrum Encroachment Goals	0	10		5	10	0	0	10	2
4	Maritime Sustainability Goals	10	10	5		2	2	0	2	2
5	National Airspace System Goals	0	5	10	2		2	2	10	5
6	Air Quality Goals	2	10	0	2	2		2	5	10
7	Airborne Noise Goals	5	5	0	0	2	2		5	10
8	Urban Growth Goals	10	10	10	2	10	5	5		0
9	Community Outreach Goals	10	10	2	2	5	10	10	0	
	TOTAL	**47**	**70**	**37**	**33**	**36**	**33**	**29**	**52**	**49**
	RANKING	**4**	**1**	**6**	**7**	**5**	**8**	**9**	**2**	**3**

0	no relationship
2	Low relationship
5	Med. relationship
10	High relationship

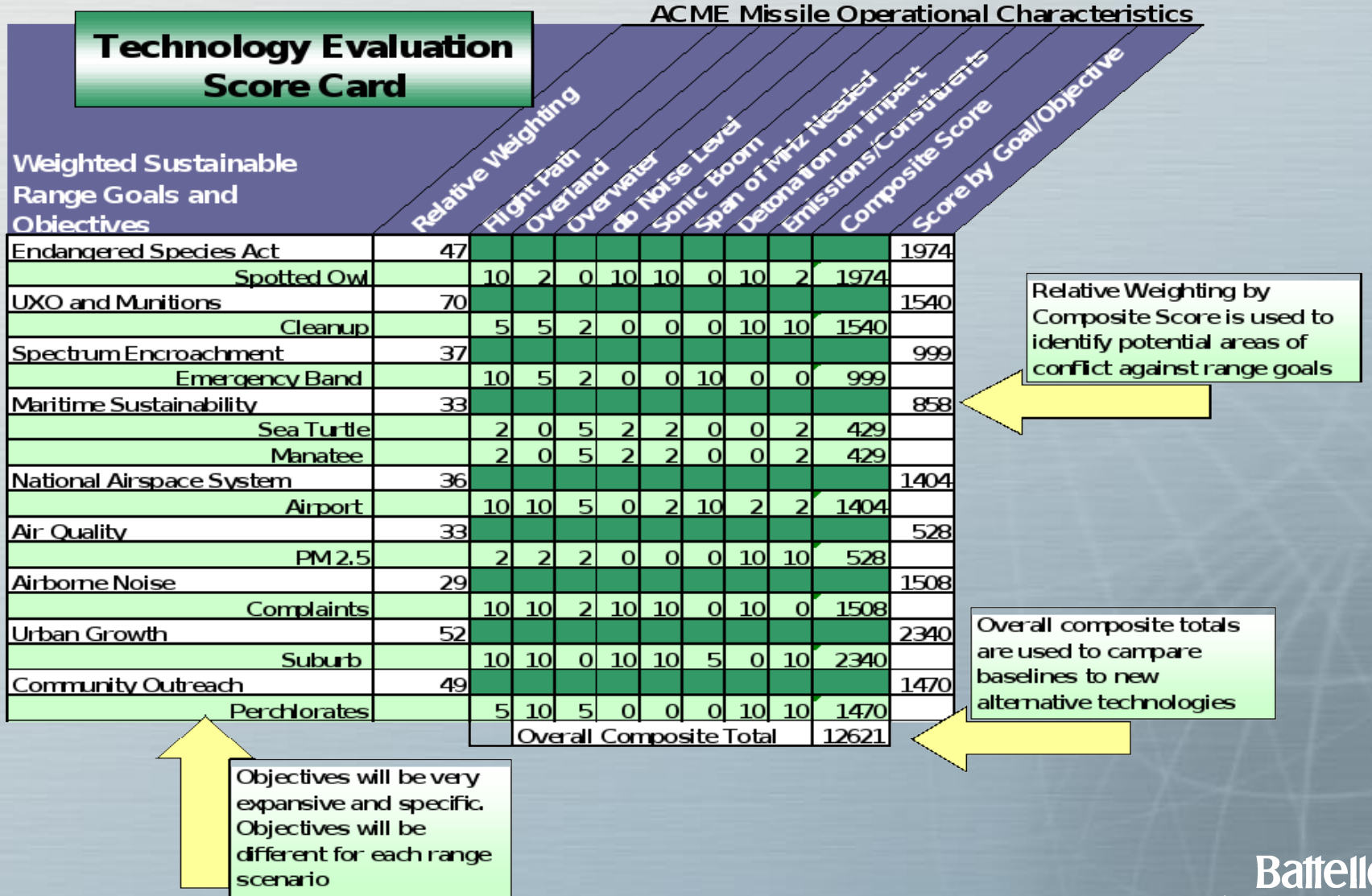
Battelle
The Business of Innovation

Define Technology Operating Parameters

- **Example (ACME Missile WS)**
  - **Critical Flight Path**
  - **Overland Operational Characteristics**
  - **Overwater Operational Characteristics**
  - **Noise Level (db)**
  - **Sonic Boom**
  - **Required Operational RF Spectrum**
  - **Detonation Characteristics**
  - **Emissions/Constituents**

Battelle
The Business of Innovation

Technology Evaluation Scorecard


Technology Evaluation Score Card
ACME Missile Operational Characteristics
Weighted Sustainable Range Goals and Objectives
Relative Weighting
Flight Path
Overland
Overwater
dB Noise Level
Sonic Boom
Span of Miz Needed
Detonation on Impact
Emissions/Constituents
Composite Score
Score by Goal/Objective
Endangered Species Act 47 1974
Spotted Owl 10 2 0 10 10 0 10 2 1974
UXO and Munitions 70 1540
Cleanup 5 5 2 0 0 0 10 10 1540
Spectrum Encroachment 37 999
Emergency Band 10 5 2 0 0 10 0 0 999
Maritime Sustainability 33 858
Sea Turtle 2 0 5 2 2 0 0 2 429
Manatee 2 0 5 2 2 0 0 2 429
National Airspace System 36 1404
Airport 10 10 5 0 2 10 2 2 1404
Air Quality 33 528
PM 2.5 2 2 2 0 0 0 10 10 528
Airborne Noise 29 1508
Complaints 10 10 2 10 10 0 10 0 1508
Urban Growth 52 2340
Suburb 10 10 0 10 10 5 0 10 2340
Community Outreach 49 1470
Perchlorates 5 10 5 0 0 0 10 10 1470
Overall Composite Total 12621
Relative Weighting by Composite Score is used to identify potential areas of conflict against range goals
Overall composite totals are used to campare baselines to new alternative technologies
Objectives will be very expansive and specific. Objectives will be different for each range scenario

Battelle
The Business of Innovation

ASSESSING CURRENT AND FUTURE TECHNOLOGIES TO MEET THE RANGE SUSTAINABILITY CHALLENGE

QUESTIONS?